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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CURS, NATHAN M	
ART UNIT	**PAPER NUMBER**
2613	
MAIL DATE	**DELIVERY MODE**
10/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,224	YUN ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 20 September 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 03 January 2007 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art ("APA") (specification figs. 1 and 2 and page 1, line 13 to page 5, line 11) in view of Rapp (US Patent Application Publication No. 2003/0147126).

Regarding claim 1, APA discloses a semiconductor optical amplifier (SOA) module apparatus for amplifying an optical signal received from an input optical fiber, and transmitting the amplified optical signal to an output optical fiber, comprising: a semiconductor optical amplifier (SOA) configure to amplify an optical signal applied to its own first stage (fig. 1 and page 2, lines 17-20, where the SOA inherently outputs an ASE light at the first stage); to output the amplified optical signal at its own second stage (fig. 2 and page 2, lines 17-20); and input unit having a first isolator that is configured to transmit an input optical signal to the first stage of the SOA (fig. 1, element 143 and page 3, lines 3-17); and an output unit configured to converge the amplified optical signal received from the SOA onto one end of the output optical fiber (fig. 2 and page 2, lines 17-20). APA discloses a monitored signal used for maintaining proper amplification, but does not disclose that the first isolator controls the ASE light received from the first stage of the SOA to separate it from a traveling path of the input optical signal at a prescribed angle, and transmit the ASE light separated from the traveling path through the first

isolator to a photo-diode where the photodiode is configured to receive and detect a power level of the ASE light passing through the first isolator and disposed at a predetermined angle relative to the first isolator. Rapp disclose an isolator and photo-diode used at the input side of an optical amplifier, where the ASE light propagating in a backward direction from the amplifier goes through the isolator, separating from the main path at an angle, to be detected by a photo-diode (figs. 1, 3 and 4 and paragraphs 0010-0012 and 0043-0048). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify APA based on the isolator teaching of Rapp, using an isolator and photo-diode arrangement like that of Rapp in place of the isolator and with the existing controller of APA, to provide the benefit of aiding in amplifier gain control by measuring the ASE light, as well as using the ASE power to reach conclusions on again processes or other faults occurring in the transmission path, as taught by Rapp.

Regarding claim 2, the combination of APA and Rapp discloses the apparatus as set forth in claim 1, wherein the input unit includes: a first collimating lens system configured to face one end of the input optical fiber, and to collimate the optical signal (APA: fig. 1, element 144); a first glass window configured to transmit the optical signal collimated at the first collimating lens system to the first isolator (APA: fig. 1, element 142); and a first convergence lens system, being disposed between the first isolator and the first stage of the SOA, being configured to converge the optical signal received from the first isolator onto the first stage of the SOA, and being configured to output the ASE light emitted from the first stage of the SOA to the first isolator (APA: fig. 1 elements 143 and 144 and Rapp: figs. 3 and 4, as applicable in the combination).

Regarding claim 3, the combination of APA and Rapp discloses the apparatus as set forth in claim 1, further including a controller being communicatively connected with the first photo diode and being configured to determine a power level of the optical signal as a function

of the detected power level of the ASE light (APA: fig. 1, elements 162 and 180 and Rapp: figs. 3 and 4, as applicable in the combination).

Regarding claim 4, the combination of APA and Rapp discloses the apparatus as set forth in claim 1, further comprising: a second monitor photo-diode configured to detect an uncoupled optical signal emitted from the output unit without being transmitted to the one end of the output optical fiber (APA: fig. 2, element 171).

Regarding claim 5, the combination of APA and Rapp discloses the apparatus as set forth in claim 1, wherein the output unit includes: a first collimating lens system configured to collimate the amplified optical signal received from the second stage of the SOA (APA: fig. 2, element 154); a second isolator configure to transmit the amplified optical signal received from the second collimating lens system, to separate a partially-uncoupled optical signal from a traveling path of the amplified optical signal at a prescribed angle, and to transmit the uncoupled optical signal separated from the traveling path (APA: fig. 2, elements 153 and 170); a first convergence lens system being disposed to converge the amplified optical signal received from the second isolator onto one end of the output optical fiber (APA: fig. 2, element 151); and a first glass window being disposed between the second isolator and the second convergence lens system, being configured to transmit the collimated amplified optical signal to the second convergence lens system (APA: fig. 2, element 152).

Regarding claim 6, the combination of APA and Rapp discloses the apparatus as set forth in claim 5, further comprising a second monitor photo-diode configured to receive and detect a power level of the separated partially-uncoupled optical signal (APA: fig. 2, element 171).

Regarding claim 7, the combination of APA and Rapp discloses the apparatus as set forth in claim 6, further including a controller being communicatively connected with the second

monitor photo-diode and being configured to determine a power level of the amplified optical signal received from the second stage based on the detected power level of the separated partially-coupled optical signal (APA: fig. 2, elements 171 and 180).

Regarding claim 8, the combination of APA and Rapp discloses the apparatus as set forth in claim 7, wherein the separation of the optical signal is performed by refracting the optical signal (Rapp: figs. 3 and 4 as applicable in the combination).

Regarding claim 9, the combination of APA and Rapp discloses the apparatus as set forth in claim 7, wherein the controller is configured to determine, as a function of the detected power level of the ASE light, a power level of the optical signal before amplification by the SOA (APA: page 4, line 17 to page 5, line 1 and Rapp: paragraphs 0010-0012 and as applicable in the combination).

Regarding claim 10, the combination of APA and Rapp discloses the apparatus as set forth in claim 1, wherein the output unit includes: a first collimating lens system configured to collimate the amplified optical signal received from the second stage of the SOA (APA: fig. 2, element 154); a first convergence lens system configured to converge the amplified optical signal collimated by the second collimating lens system onto one end of the output optical fiber (APA: fig. 2, element 151); a second isolator being disposed between the second collimating lens system and the second convergence lens system, being configured to transmit the amplified optical signal received from the second collimating lens system to the second convergence lens system, and being configured to cut off optical signals received from the second convergence lens system (APA: fig. 2, element 153); and a first glass window being disposed between the second isolator and the second convergence lens system, being configured to transmit the amplified optical signal received from the second isolator to the second convergence lens system and being configured to reflect a partially-uncoupled optical

signal and to separate it from the traveling path of the amplified optical signal at a prescribed angle (APA: fig. 2, element 170).

Regarding claim 11, the combination of APA and Rapp discloses the apparatus as set forth in claim 10, further comprising a second monitor photo-diode configured to receive and detect a power level of the reflected partially-uncoupled optical signal (APA: fig. 2, element 171).

Regarding claim 12, the combination of APA and Rapp discloses the apparatus as set forth in claim 11, further including a controller being communicatively connected with the second monitor photo-diode and being configured to determine a power level of the amplified optical signal received from the second stage based on the detected power level of the reflected partially-uncoupled optical signal (APA: fig. 2, elements 171 and 180).

Regarding claim 13, the combination of APA and Rapp discloses the apparatus as set forth in claim 12, wherein the controller is configured to determine, as a function of the detected power level of the ASE light, a power level of the optical signal before amplification by the SOA (APA: page 4, line 17 to page 5, line 1 and Rapp: paragraphs 0010-0012 and as applicable in the combination).

Regarding claim 14, APA discloses a semiconductor optical amplifier (SOA) module apparatus for amplifying an optical signal received from an input optical fiber, and transmitting the amplified optical signal to an output optical fiber, comprising: a semiconductor optical amplifier (SOA) having a first stage and a second stage, the SOA being configured to amplify an optical signal applied to the first stage, to output the amplified optical signal at the second stage (fig. 1 and page 2, lines 17-20, where the SOA inherently outputs an ASE light at the first stage); an input unit having a first isolator that is configured to transmit an input optical signal to the first stage of the SOA (fig. 1, element 143 and page 3, lines 3-17); and an output unit configured to converge the amplified optical signal received from the SOA onto one end of the output optical

fiber (fig. 2 and page 2, lines 17-20); and a controller being in communicative connection with the output unit and the SOA and being configured to regulate a level of amplification of the SOA (fig. 1, element 180 and page 4, line 17 to page 5, line 1). APA discloses a monitored signal used for maintaining proper amplification, but does not disclose that the first isolator controls the ASE light received from the first stage of the SOA to separate it from a traveling path of the input optical signal at a prescribed angle, and to transmit the ASE light separated from the traveling path through the first isolator to a photo-diode where the photodiode is connected to the controller and configured to receive and detect a power level of the ASE light passing through the first isolator and disposed at a predetermined angle relative to the first isolator. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify APA based on the isolator teaching of Rapp, as described above for claim 1.

Regarding claim 15, the combination of APA and Rapp discloses the apparatus as set forth in claim 14, wherein the controller is configured to determine a power level of the optical signal as a function of the detected power level of the ASE light (APA: page 4, line 17 to page 5, line 1 and Rapp: figs. 3 and 4 as applicable in the combination).

Regarding claim 16, the combination of APA and Rapp discloses the apparatus as set forth in claim 14, further comprising: a second monitor photo-diode configured to detect an uncoupled optical signal emitted from the output unit without being transmitted to the one end of the output optical fiber (APA: fig. 2, element 171).

Regarding claim 17, the combination of APA and Rapp discloses the apparatus as set forth in claim 14, wherein first isolator is configured to transmit the input optical signal to the first stage (APA: fig. 1, element 143) and wherein the output unit includes: a first collimating lens system configured to collimate the amplified optical signal received from the second stage of the SOA (APA: fig. 2, element 154); a second isolator configured to transmit the amplified optical

signal received from the second collimating lens system, to separate a partially-uncoupled optical signal from a traveling path of the amplified optical signal at a prescribed angle, and to transmit the uncoupled optical signal separated from the traveling path (APA: fig. 2, elements 153 and 170); a first convergence lens system being disposed to converge the amplified optical signal received from the second isolator onto one end of the output optical fiber (APA: fig. 2, element 151); and a first glass window being disposed between the second isolator and the second convergence lens system, the second glass window being configured to transmit the collimated amplified optical signal to the second convergence lens system (APA: fig. 2, element 152).

Regarding claim 18, the combination of APA and Rapp discloses the apparatus as set forth in claim 17, further comprising a second monitor photo-diode being configured to receive and detect a power level of the separated partially-uncoupled optical signal (APA: fig. 2, element 171).

Regarding claim 19, the combination of APA and Rapp discloses the apparatus as set forth in claim 18, wherein the controller is configured to deterimine a power level of the amplified optical signal received from the second stage based on the detected power level of the separated partially-coupled optical signal (APA: page 4, line 17 to page 5, line 1).

Regarding claim 20, the combination of APA and Rapp discloses the apparatus as set forth in claim 19, wherein the separation of the optical signal is performed by refracting the optical signal (Rapp: figs. 3 and 4 as applicable in the combination).

Regarding claim 21, the combination of APA and Rapp discloses the apparatus as set forth in claim 4, wherein the second monitor photo- diode is disposed at a predetermined angle relative to the second isolator (Rapp: figs. 1, 3 and 4 and paragraphs 0010-0012 and 0043-0048, as applicable in the combination).

Regarding claim 22, the combination of APA and Rapp discloses the apparatus as set forth in claim 16, wherein the second monitor photo- diode is disposed at a predetermined angle relative to the second isolator (Rapp: figs. 1, 3 and 4 and paragraphs 0010-0012 and 0043-0048, as applicable in the combination).

Response to Arguments

3. Applicant's arguments, filed 20 September 2007, have been fully considered but they are not persuasive. The applicant argues that the combination Of APA and Rapp does not disclose the newly recited photodiode disposed at a predetermined angle relative to the first isolator. However, the combination of APA and Rapp does read on this limitation, namely, the photodiode of Rapp, as applicable in the combination, is disposed at an angle relative to the isolator. For example, in Rapp fig. 4, the horizontal, left to right, direction in the figure is the direction of the isolator, and the photodiode is disposed such that it receives reflected light at an angle relative to the direction of the isolator.

Conclusion

4. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shi K. Li

SHI K. LI
PRIMARY PATENT EXAMINER